This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.   (Previously Presented) A method of processing video data to detect field characteristics of the data, said data having a plurality of fields, comprising:

calculating a first difference value as a difference between pixels of a first field and pixels of a second field, said first field being successive to said second field;

calculating a second difference value between the pixels of said first field and pixels of a third field, said third field being successive to said first field;

calculating a ratio between said first and second difference values;

comparing said ratio with a threshold; and

determining whether said first field is an interlaced field or a progressive field with respect to said third field based on said steps of calculating, wherein the determining step includes determining whether said first field is an interlaced field or a progressive field based on said comparing step.

2.   (Previously Presented) The method as claimed in claim 1, wherein said calculating steps include calculating absolute differences and accumulating said absolute pixel differences.

3. – 8. (Canceled)

9.   (Previously Presented) An apparatus for processing video data to detect field characteristics of the data, said data having a plurality of fields, comprising:

difference value calculating means for calculating a first difference value as a difference between pixels of a first field and pixels of a second field, said first field being a

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successive field of said second field, and calculating a second difference value between the pixels of said first field and pixels of a third field, said third field being a successive field of said first field;

progressive/interlace decision means for determining whether said first field is an interlaced field or a progressive field with respect to said third field based on the first and second difference values, wherein said progressive/interlace decision means comprises dividing means for calculating a ratio between said first and second difference values and comparator means for comparing said ratio with a threshold and determining whether said first field is an interlaced field or a progressive field based on said comparison.

10.   (Previously Presented) The apparatus as claimed in claim 9, wherein the difference value calculating means includes subtractor means for calculating absolute pixel differences and accumulator means for accumulating the absolute pixel differences.

11. – 14.   (Canceled)

15.   (Previously Presented) An apparatus for processing video data to detect field characteristics of the data, said data having a plurality of fields, comprising:

difference value calculating means for calculating a first difference value as a difference between pixels of a first field and pixels of a second field, said first field being a successive field of said second field, and calculating a second difference value between the pixels of said first field and pixels of a third field, said third field being a successive field of said first field;

progressive/interlace decision means for determining whether said first field is an interlaced field or a progressive field with respect to said third field based on the first and second difference values, wherein the difference value calculating means includes subtractor means for calculating absolute pixel differences and accumulator means for accumulating the absolute pixel differences, wherein said subtractor means comprises:

a first subtractor receiving a pixel of said first field and a first pixel of said second field and calculating a first pixel difference;

a second subtractor receiving said pixel of said first field and a second pixel of said second field and calculating a second pixel difference; and

a comparator selecting a smaller pixel difference between said first and second pixel differences, wherein the accumulator means accumulates said smaller pixel difference.

16.   (Previously Presented) An apparatus according to claim 15, further comprising a noise attenuator arranged downstream of said comparator and setting to zero said smaller pixel difference if is less than a noise threshold.

17.   (Canceled)

18.   (Previously Presented) An apparatus for processing video data to detect field characteristics of the data, said data having a plurality of fields, comprising:

difference value calculating means for calculating a first difference value as a difference between pixels of a first field and pixels of a second field, said first field being a successive field of said second field, and calculating a second difference value between the pixels of said first field and pixels of a third field, said third field being a successive field of said first field;

progressive/interlace decision means for determining whether said first field is an interlaced field or a progressive field with respect to said third field based on the first and second difference values;

input means;

a first field memory having an input connected to said input means and an output connected to said difference value calculating means, said difference value calculating means being also connected to said input means;

a second field memory connected to the output of said first field memory and having an output; and

a moving pixel counter having inputs connected to said input means and the output of said second field memory, and an output connected to said interlaced/progressive decision unit, said moving pixel counter counting moving pixels between said second and third fields and to obtain a count value of the moving pixels, wherein said progressive/interlace decision means includes means for comparing said count value of moving pixels with a moving pixel threshold, and means for defining said first and third fields as progressive if said count value of moving pixels is lower than said moving pixel threshold, and for defining said first and third fields as interlaced if said count value of moving pixels is not lower than said moving pixel threshold.

19.   (Previously Presented) An apparatus according to claim 18, wherein said moving pixel counter comprises:

a subtractor having inputs connected to said input means and the output of said second field memory and calculating absolute differences between pixels present on said inputs of the subtractor; and

a sub-block moving pixel counter connected to an output of said subtractor.

20.   (Previously Presented) An apparatus according to claim 19, further comprising:

a sub-block accumulator connected to the output of said subtractor;

a repeat field detection unit having an input connected to the output of said sub-block accumulator, and

a field grouping unit having first and second inputs respectively connected to the output of said repeat field detection unit and to the output of said progressive/interlace decision means.

21.   (Previously Presented) An apparatus according to claim 20, further comprising a scene change detection unit having an input connected to said sub-block

accumulator and an output connected to said progressive/interlace decision means; said progressive/interlace decision means including:

means for calculating a first difference between a first pixel in said first field and a second pixel in said third field;

means for calculating a second difference between a third pixel in said first field and said second pixel in said third field;

means for calculating a third difference between said third pixel in said first field and a fourth pixel in said third field; and

means for determining said third and fourth pixels as interlaced if said first, second and third differences are greater than an interlace threshold.

22.   (Canceled)

23.   (Previously Presented) A method of processing video data to detect field characteristics of the data, said data having a plurality of fields, comprising:

calculating a first difference value as a difference between pixels of a first field and pixels of a second field, said first field being successive to said second field;

calculating a second difference value between the pixels of said first field and pixels of a third field, said third field being successive to said first field; and

determining whether said first field is an interlaced field or a progressive field with respect to said third field based on said steps of calculating, wherein said step of calculating a first difference value comprises for each of a plurality of the pixels of said first field:

calculating pixel differences between the pixel of said first field and two pixels of said second field;

selecting a smaller pixel difference between said pixel differences; and

accumulating said smaller pixel difference.

24.   (Previously Presented) A method according to claim 23, wherein, before accumulating, said smaller pixel difference is set to zero if said smaller pixel difference is less than a noise threshold.

25.   (Previously Presented) A method according to claim 1, further comprising:
calculating the number of moving pixels between said second and third fields, wherein the determining step includes determining that said first field is an interlaced field if said number is lower than a moving pixel threshold, and determining that said first and third fields are progressive if said number is not lower than the moving pixel threshold.

26.   (Previously Presented) A method according to claim 1, further comprising verifying whether a scene-change has occurred before performing said calculating steps.

27.   (Previously Presented) A method of processing video data to detect field characteristics of the data, said data having a plurality of fields, comprising:
calculating a first difference value as a difference between pixels of a first field and pixels of a second field, said first field being successive to said second field;
calculating a second difference value between the pixels of said first field and pixels of a third field, said third field being successive to said first field;
determining whether said first field is an interlaced field or a progressive field with respect to said third field based on said steps of calculating; and
verifying whether a scene-change has occurred before performing said calculating steps, wherein if said step of verifying reveals that a scene-change has occurred, then the method includes performing a moving pixel detection by:
calculating a first difference between a first pixel in said first field and a second pixel in said third field;
calculating a second difference between a third pixel in said first field and said second pixel in said third field;

calculating a third difference between said third pixel in said first field and a fourth pixel in said third field; and

determining said third and fourth pixels as interlaced if said first, second, and third differences are greater than an interlace threshold.

28.   (Previously Presented) A method according to claim 27, further comprising, for each of a plurality of sub-blocks of said first and third fields:

detecting a moving region by repeating said moving pixel detection for pixels of the sub-block; if the number of interlaced pixels in said sub-block is higher than a region threshold said sub-block is considered interlaced; and, if more than one sub-block is found interlaced, then said first and third fields are considered interlaced.

29.   (Previously Presented) A method according to claim 1, further comprising, if said first and third fields are interlaced, then grouping said first and third fields and setting a fourth field, successive to said third field, as current first field.

30.   (Previously Presented) A method according to claim 1, wherein, if said first and third fields are not interlaced, then checking if a fourth field, successive to said third field, is repeating said first field, if so, then:

grouping said first and third fields;

dropping said fourth field; and

setting a fifth field, successive to said fourth field, as current first field, and if the fourth field is not repeating said first field, then:

grouping said first and third fields; and

setting said fourth field as current first field.

31.   (Previously Presented) A method of processing video data to detect field characteristics of the data, the data having first, second, and third fields in which the third field is successive to the first field which is successive to the second field, the method comprising:

determining, for each of a plurality of pixels of the third field, whether the pixel is a moving pixel by:

calculating a difference between a value of the pixel and a value of a pixel in the second field having a position that is the same as a position of the pixel of the third field; and

determining whether the calculated difference is greater than a moving threshold;

calculating a moving pixel count value that indicates how many pixels of the third field are determining to be moving pixels;

determining whether the pixel count value is less than a moving pixel count threshold; and

determining whether the first field is an interlaced field or a progressive field with respect to the third field based on whether the pixel count value is less than the moving pixel count threshold.

32. (Previously Presented) The method of claim 31, further comprising:

calculating a first difference value as a difference between pixels of the first field and pixels of the second field; and

calculating a second difference value between the pixels of the first field and pixels of the third field, wherein determining whether the first field is an interlaced field or a progressive field is also based on the first and second difference values.

33. (Previously Presented) The method of claim 32, further comprising:

calculating a ratio between the first and second difference values; and

comparing the ratio with a threshold, wherein determining whether the first field is an interlaced field or a progressive field is based on the comparing step.

34. (Previously Presented) The method of claim 32, wherein the step of calculating a first difference value comprises for each of a plurality of the pixels of the first field:

calculating pixel differences between the pixel of the first field and two pixels of the second field;

selecting a smaller pixel difference between the pixel differences; and

accumulating the smaller pixel difference.

35.   (Previously Presented) The method of claim 31, further comprising:

verifying whether a scene-change has occurred before performing the determining and calculating steps;

if the step of verifying reveals that a scene-change has occurred, then performing a moving pixel detection by:

calculating a first difference between a first pixel in the first field and a second pixel in the third field;

calculating a second difference between a third pixel in the first field and the second pixel in the third field;

calculating a third difference between the third pixel in the first field and a fourth pixel in the third field; and

determining that the third and fourth pixels are interlaced if the first, second, and third differences are greater than an interlace threshold.

36.   (Previously Presented) The method of claim 35, further comprising, for each of a plurality of sub-blocks of the first and third fields:

detecting a moving region by repeating the moving pixel detection for pixels of the sub-block; if the number of interlaced pixels in the sub-block is higher than a region threshold the sub-block is considered interlaced; and, if more than one sub-block is found interlaced, then the first and third fields are considered interlaced.